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MOTOR TRANSPORT AT SOVIET CONSTRUCTION PROJECTS

Motor Transport at Kuybyshevgidrostroy

The new MAZ-205, ZIS-585, GAZ-93, ZIS-150, and ZIS-151 trucks are being used at Kuybyshevgidrostroy (Organization for the Construction of the Kuybyshev Hydroelectric Station). The volume of work of motor transport is steadily increasing and the volume hauled during the first 5 months of 1951 equaled that of the entire year 1950.

The output in tons increased each succeeding month from January to May 1951. The increase over January was approximately 85 percent in February, 115 percent in March, 275 percent in April, and 320 percent in May.

The increase in ton-kilometers over January was approximately 35 percent in February, 83 percent in March, 55 percent in April, and 80 percent in May. In April, the output in ton-kilometers was less than in March. This was caused by the spring period and the transfer of many trucks to hauling dirt excavated for the foundation of the hydroelectric station.

To improve the operations of motor transport at the project, it is necessary to set up the motor pools in units of 200, 250, and 300 vehicles each. Maintenance shops must be equipped for repair, assembly, dismantling, testing, and for regulating and testing new types of vehicles.

At present, there are no well-built repair shops and garages for the motor vehicle fleet at Kuybyshevgidrostroy. Simple accessible facilities within the means of the project are essential to servicing the vehicles.

Motor Transport Defects at Industrial Construction Projects

For every million rubles' worth of completed work in the construction of industrial buildings, motor transports must perform between 120,000 and 130,000 ton-kilometers of hauling. The estimated cost of hauling freight by truck averages about 10-12 percent of the construction costs and, in some cases, as much as 18-20 percent.

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The unusual conditions under which motor vehicles are required to operate at the construction sites necessitate an improvement in the structure of motor vehicles. These conditions include unsatisfactory roads and passages, maneuvering the vehicles up to the excavation machines and hoppers of the construction industry enterprises, and unloading the trucks at the construction projects, foundation excavation, and quarries.

Construction is often carried on for comparatively short periods and does not permit the establishment of permanent transport enterprises with covered parking lots and workshops. For this reason, the vehicles which serve the construction industry must have:

1. More durable and uniform wearing quality of assemblies and units.

2. Simple construction which will permit easy service and repair of the entire vehicle, as well as its parts.

3. Good driving characteristics, especially in reverse gear.

4. Sufficient horsepower to overcome the heavier loads, i.e., to start and move the vehicle when leaving quarries or moving over poorly constructed highways.

In addition, trucks which are used at the construction projects must have special bodies to haul free-flowing material and liquids.

As yet, the Soviet motor industry does not take into account the requirements of the construction projects. New-model trucks still have defects which hamper improvement in the operations of motor transport and do not permit a reduction in hauling cost.

The performance of new-model vehicles is being observed at various sites where construction is carried on by the Ministry of Construction of Heavy Industry Enterprises. These observations are made under various climate and road conditions, and defects were discovered in the different kinds of motor vehicles.

The frames of the ZIS-150 and ZIS-585 trucks, especially the latter, are not strong enough. The cross members are poorly riveted to the frame and the side members crack or break. On both types, the cooling system is inefficient and the motor heats up in summer. The crankshaft oil seal, water pump textolite disk, crankshaft bearing, flywheel starter gear, and other parts of the engine frequently get out of order. There is premature wear of the second and third gears of the transmission, the external bearing of the transmission main drive, third gear of the transmission, the counter shaft flange grooves of the main shaft, flange grooves of the driving gear, and the divided axles. The front spring leaves frequently by break down.

Steering is difficult, and, as the steering column is not attached firmly to the cab, the steering apparatus quickly goes out of order.

The distributor system is totally unreliable: the timing gear gets out of order, the contact points burn out, and the winding on the middle coil of the relay-regulator and the rheostat of the ignition coil burn out. Wiring insulation is of inferior quality and the distributor ball bearing wears out prematurely.

The following defects were discovered on the MAZ-205 trucks: the water pump gaskets wear out prematurely, the cylinder block cracks at the valve seats, the valves and tappets break, and the engine overheats in the summer. The front springs and front wheel hubs frequently break, steering is difficult, and no provision is made for storing a spare wheel or the tools needed for changing a wheel on the highway.

The GAZ-93 has cracks in the side members of its frame, and the third and fourth gears of the transmission and the planetary and bevel gears of the divided axle wear out prematurely. Drivers' cabs are not heated in winter, even though it would be inexpensive to heat them.

Dump trucks fitted with tanks heated by exhaust gases should be produced to haul concrete and other solutions in winter, and the ventilation system and insulation of cabs for summer work should be improved. Starting acceleration and traction power of trucks must be improved by enlarging the gear ratio of the main drive. Reducing the truck's maximum speed will not lower its performance. Truck performance also can be increased significantly by using low-pressure tires and providing an interlocking gear for the rear divided axle. Simple construction to facilitate repair work should be emphasized. At present, the valves on the GAZ-51 cannot be regulated without taking off the fender.

The construction industry must erect special tanks for liquids and free-flowing freight, and automatic loaders for container freight and various types of dump trucks. At the larger construction projects, 10- to 40-ton dump trailers and half trailers could be used.

When concrete is hauled in ordinary dump trucks over poorly constructed highways, much of it splashes out and is lost. For this reason, the construction workers require a special concrete truck with revolving tanks.

Increased building within the USSR makes it necessary to construct a plant to produce special trucks on mass-produced chassis. It is very inefficient to have this work done by the various enterprises.

At present, there are excavating machines whose capacity varies from .25 to 4 cubic meters. Mass-produced trucks do not have a large enough capacity to utilize efficiently the most productive excavators, i.e., those which have a capacity of 2.5 to 4 cubic meters.

The experience of some organizations of the Ministry of Construction of Heavy Industry Enterprises indicates a great need for trucks with more carrying capacity. For example, partial use of 10-ton diesel-engine trucks in 1950 reduced the cost per ton-kilometer in a number of constructions to 69 kopecks, compared with one ruble 10 kopecks per ton kilometer in the ministry as a whole.

In addition to assuring a higher performance and improved utilization of the larger excavating machines, the use of trucks with more carrying capacity will reduce the number of drivers. To meet the demands of the construction industry, the automotive industry should produce: 10- to 12-ton trucks; 25-ton dump trucks; 10-, 12-, and 25-ton capacity tractors; 5-, to 6-ton trailers; 10-ton and 30- to 40—ton dumping trailers which can be unloaded from three sides; revolving-tank trucks to haul liquids, flowing freight, concrete, and other solutions: automatic-loading trucks to haul container freight; and trucks with connected dollies to haul long freight.

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